

Metropolitan Water District

Water and Power Resources Management

California Energy Commission

April 8, 2005

Metropolitan Water District of Southern California



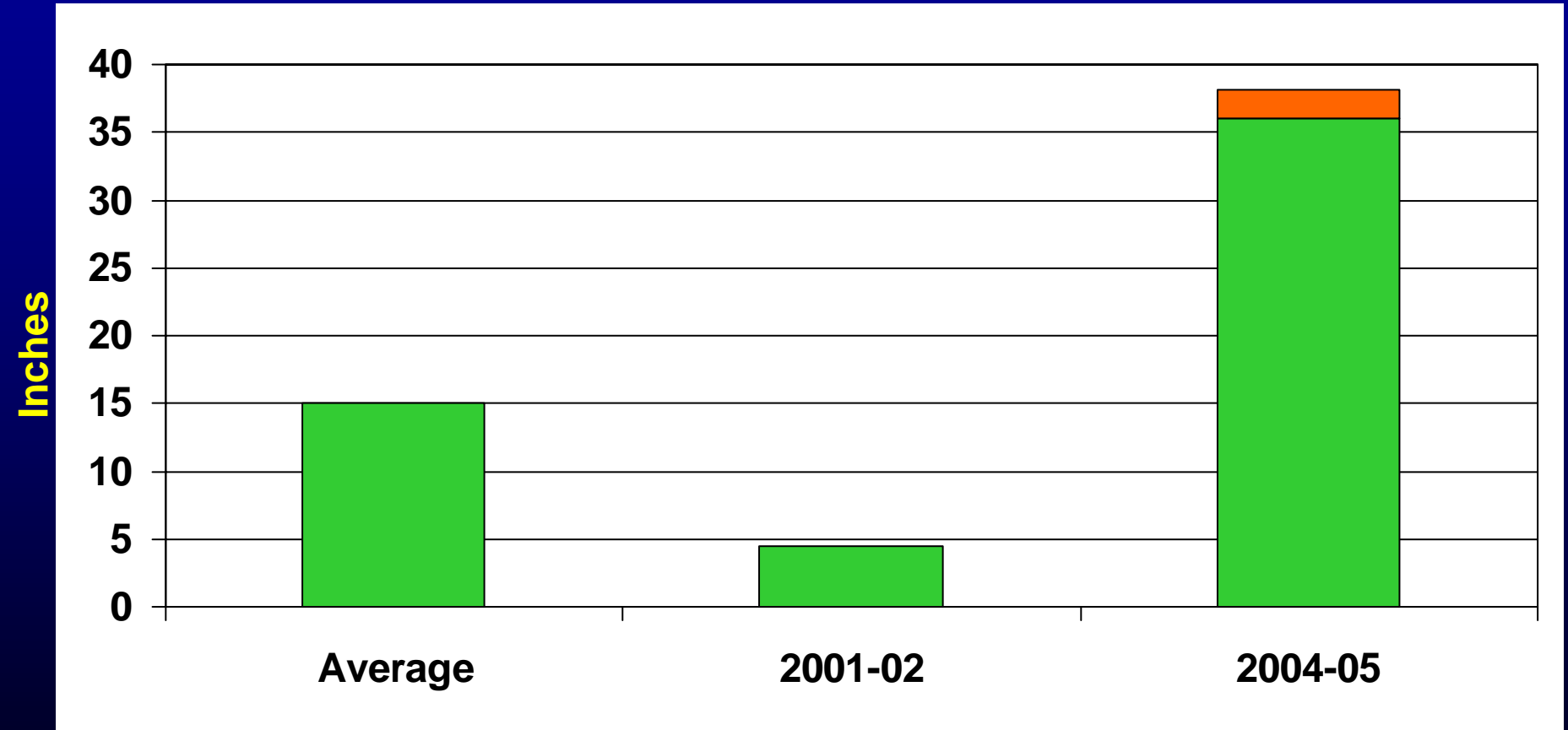
18 million residents

5,200 square miles

4 MAF demand

Fluctuating So. Cal Rainfall

Wettest and Driest Years 2 years Apart?





Lake Powell

**Confluence of Colorado
and Dirty Devil Rivers**



**March 2002 vs.
March 2003**

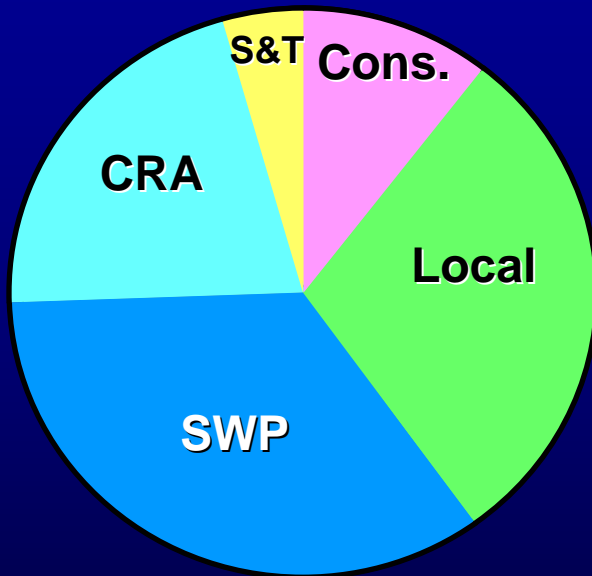
Integrated Resources Planning

A diverse resource strategy reduces risk



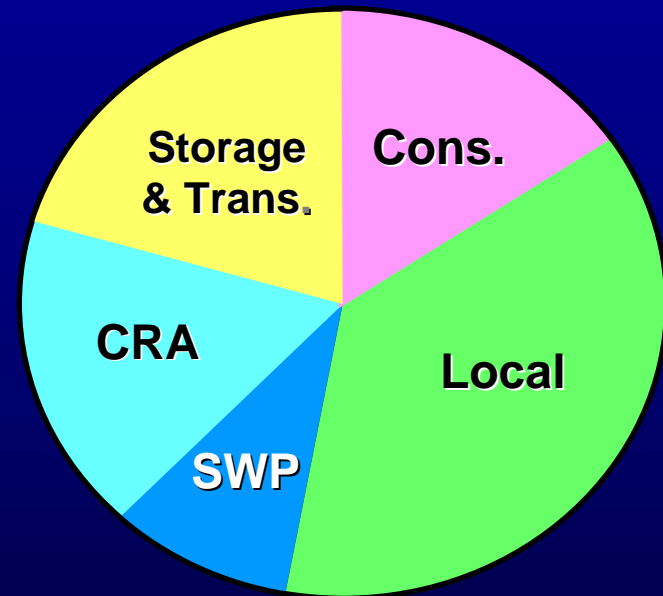
- Colorado River
- State Water Project
- Storage & transfers
- Recycling
- Groundwater recovery
- Conservation
- Seawater desalination
- Exchanges

Long Term Dry-Year Supplies



Prior to the IRP

Heavy dependence on
Imported supply



IRP Update

Maintaining balance between
Imported / local supplies

MWD Power Needs: Consumption & Generation

- SWP - Self-generates about 40%
 - MWD pays 65-85% of power costs
- CRA – Power user
 - Federal hydro contracts for about 60%
- Treatment Plants – Power user
- Distribution System
 - Small hydro generation
- Renewal energy studies



Metropolitan Power Activities

- Planning

- Strategy & contracts

- Real time

- Purchase & control

- Retail market

- Program opportunities

- Equipment efficiencies

- Maintenance and Testing

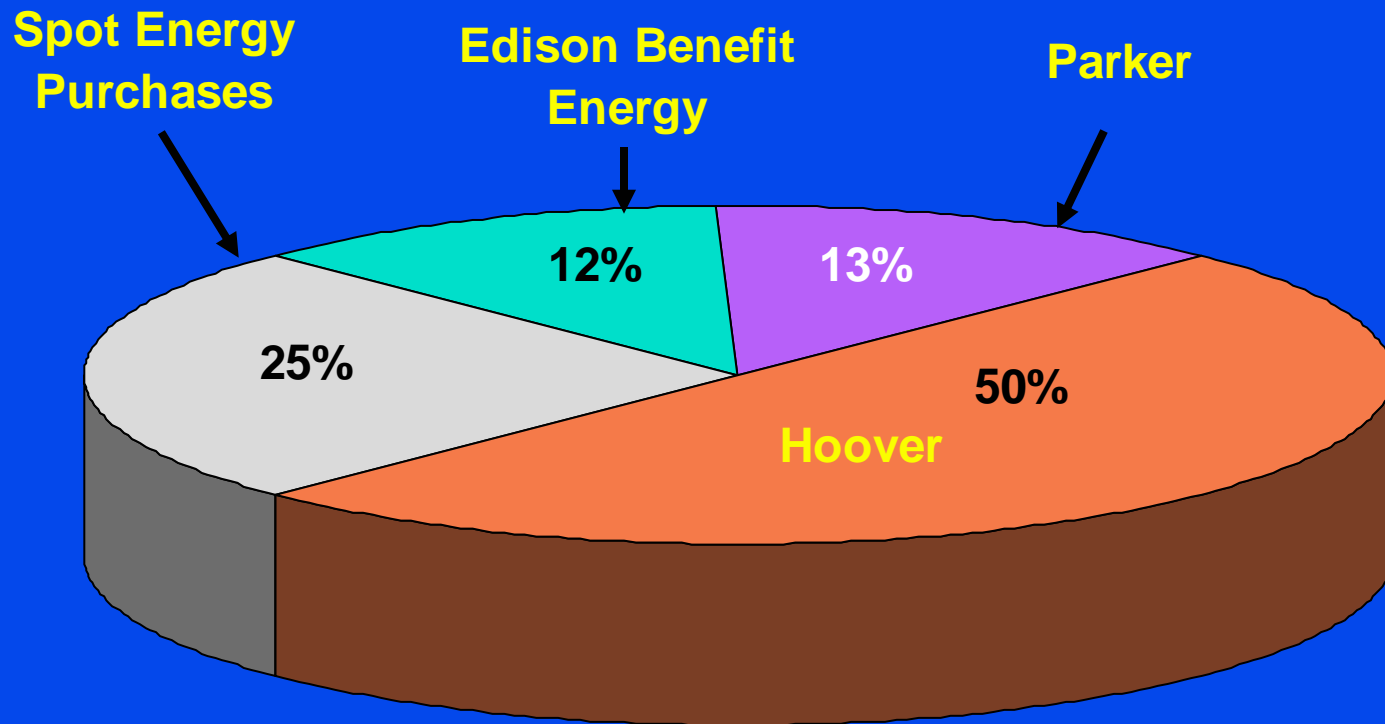
- Transmission lines & small hydro

Colorado River Aqueduct Energy Management

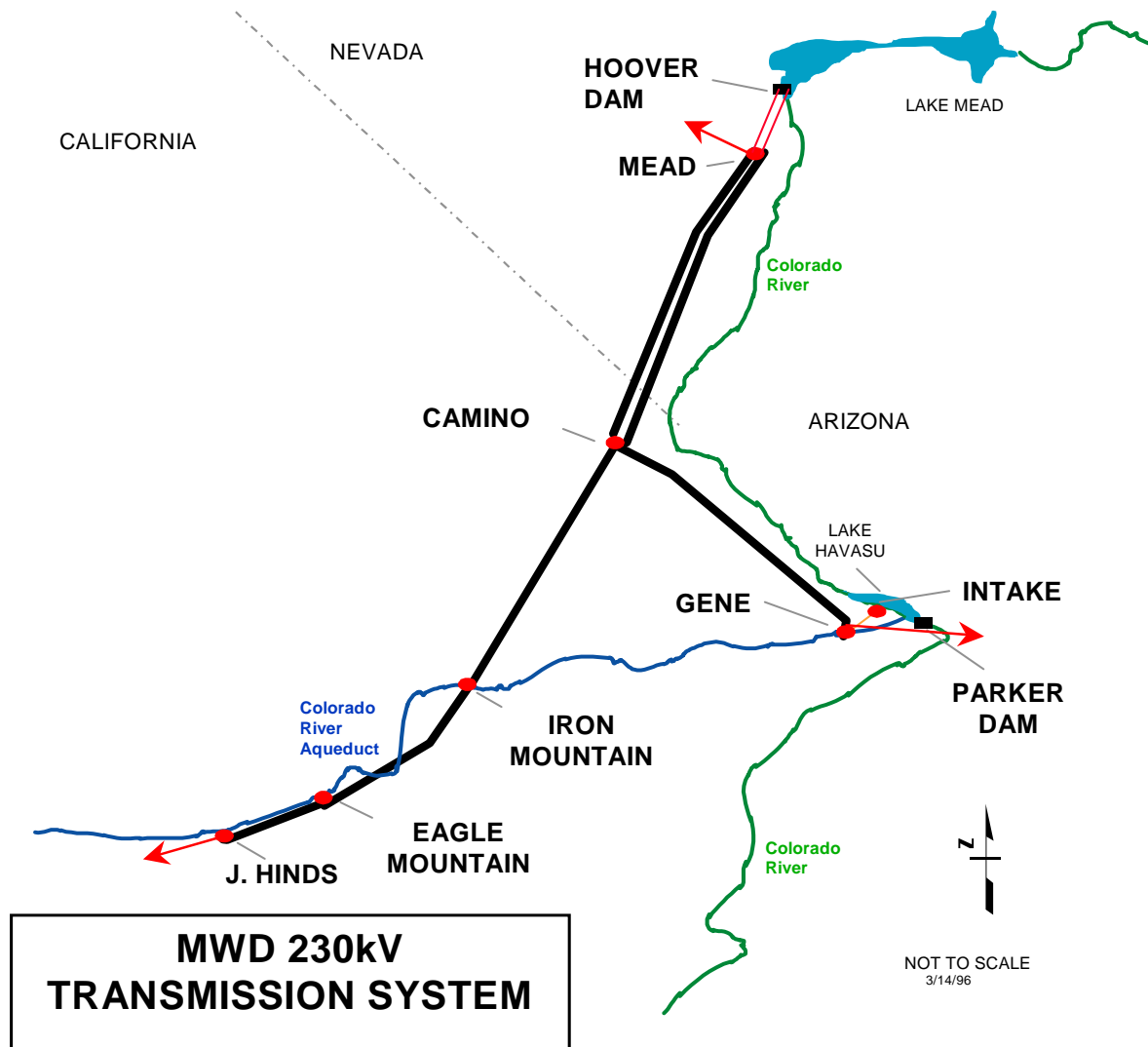
- ◆ Hoover / Parker Dam's contracts
- ◆ Purchase off-peak energy
- ◆ SCE exchange & load shedding agreement
- ◆ Upgraded pumps



METROPOLITAN'S Full CRA POWER RESOURCES



Colorado River Aqueduct



State Water Project Energy Management

- Power generation
 - Peak hydro & pump-back
 - Downhill recovery units
- Off-peak pumping strategy
 - Low forced outages
 - New / existing afterbay storage
- Weekly conference calls
 - \$300 million annual cost
- Load shedding by dropping pumps



Tehachapi East Afterbay (reduces on-peak pumping)

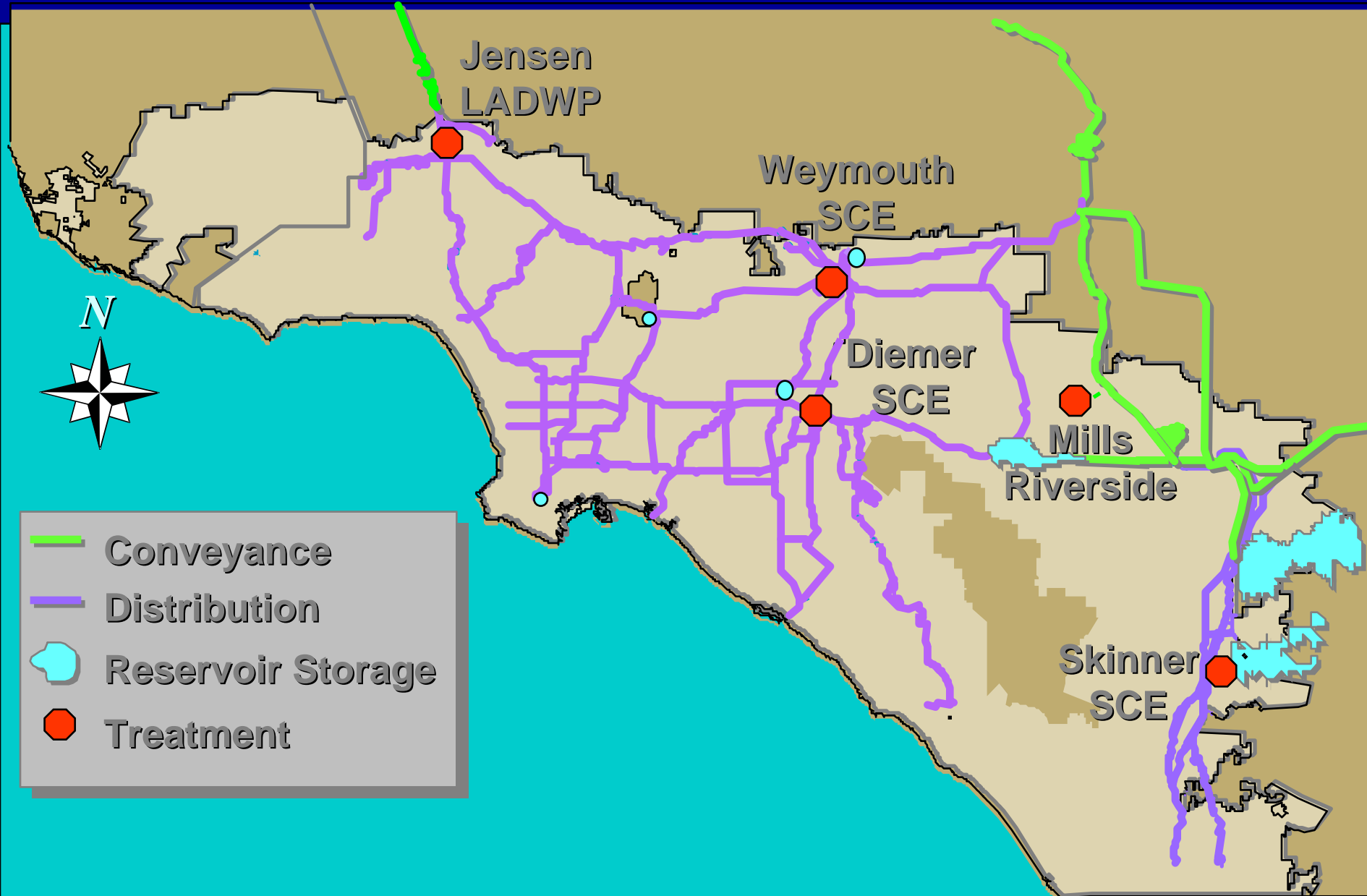


■ \$50 million

■ 900 acre-feet

■ Started
construction in
Feb. 2005

TREATMENT AND DISTRIBUTION SYSTEM



Treatment & Pumping Plants

- Retail load served by local utilities
- Interruptible service:
 - at Weymouth & Skinner plants & Diamond Valley Lake
 - Diesel Generators at plants
- Load to grow with ozonation
- Exploring solar energy

MWD Demand Management Investments through 2025

Conservation Credits	\$ 520 M
Local Resources	\$ 840 M
Seawater Desalination	\$ 510 M
Total	\$1.87 Billion

Metropolitan's Regional Investments

Recycling

● **54 projects**

Groundwater Recovery

■ **20 projects**

Conjunctive Use Programs

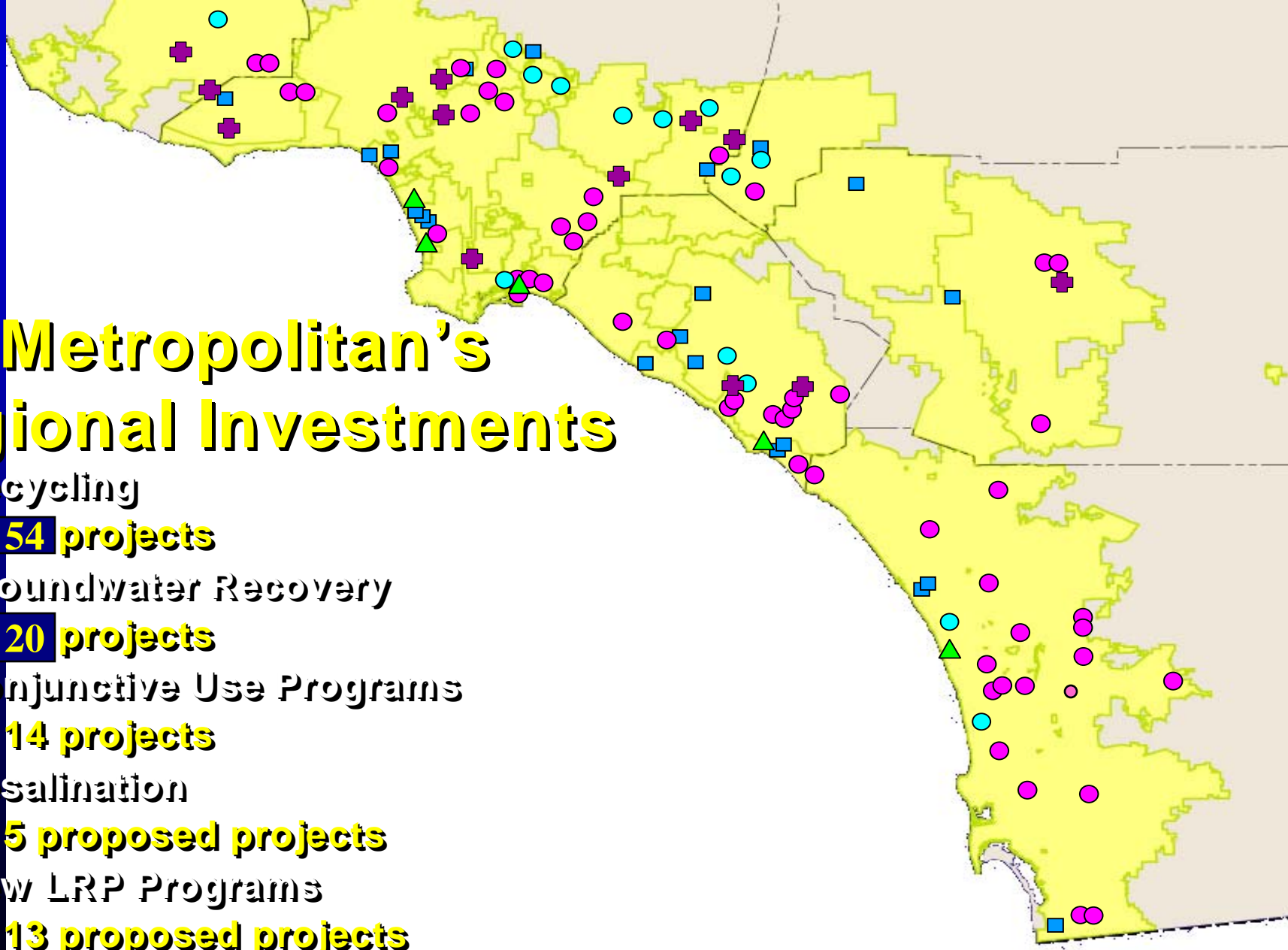
● **14 projects**

Desalination

▲ **5 proposed projects**

New LRP Programs

+ **13 proposed projects**

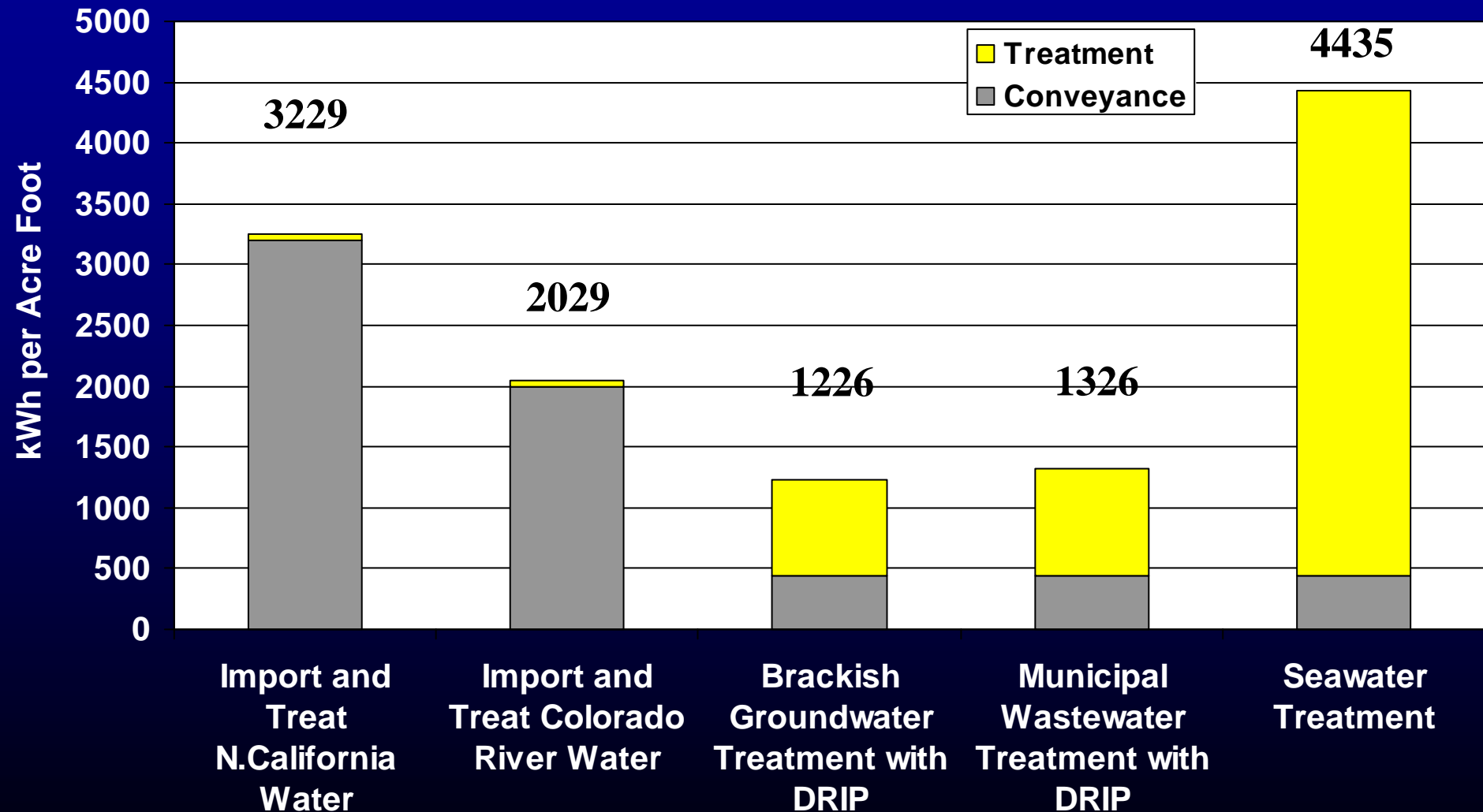


Recycled Water

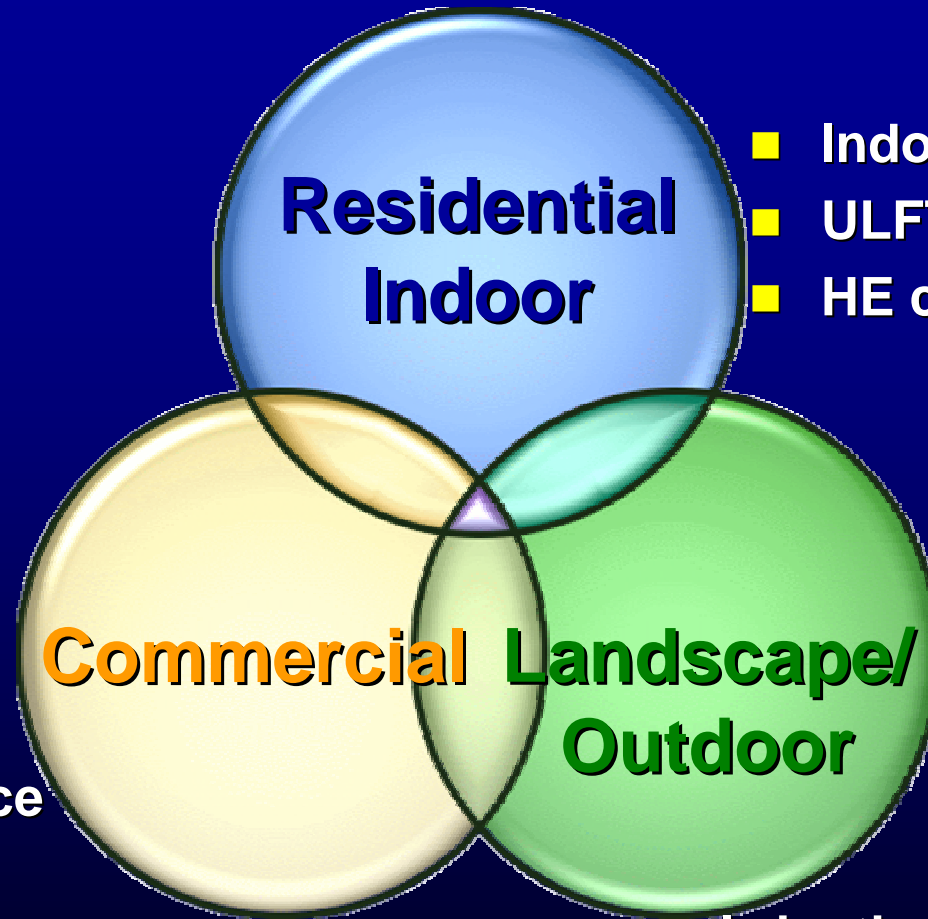
- State Task Force
 - reinforced 1 million afy goal
- Replaces imported supply
- 230,000 af in MWD
- Cooling water for power plants



Energy Consumption for Potable Water: Imported Versus Local Desalinated Water



Conservation Components

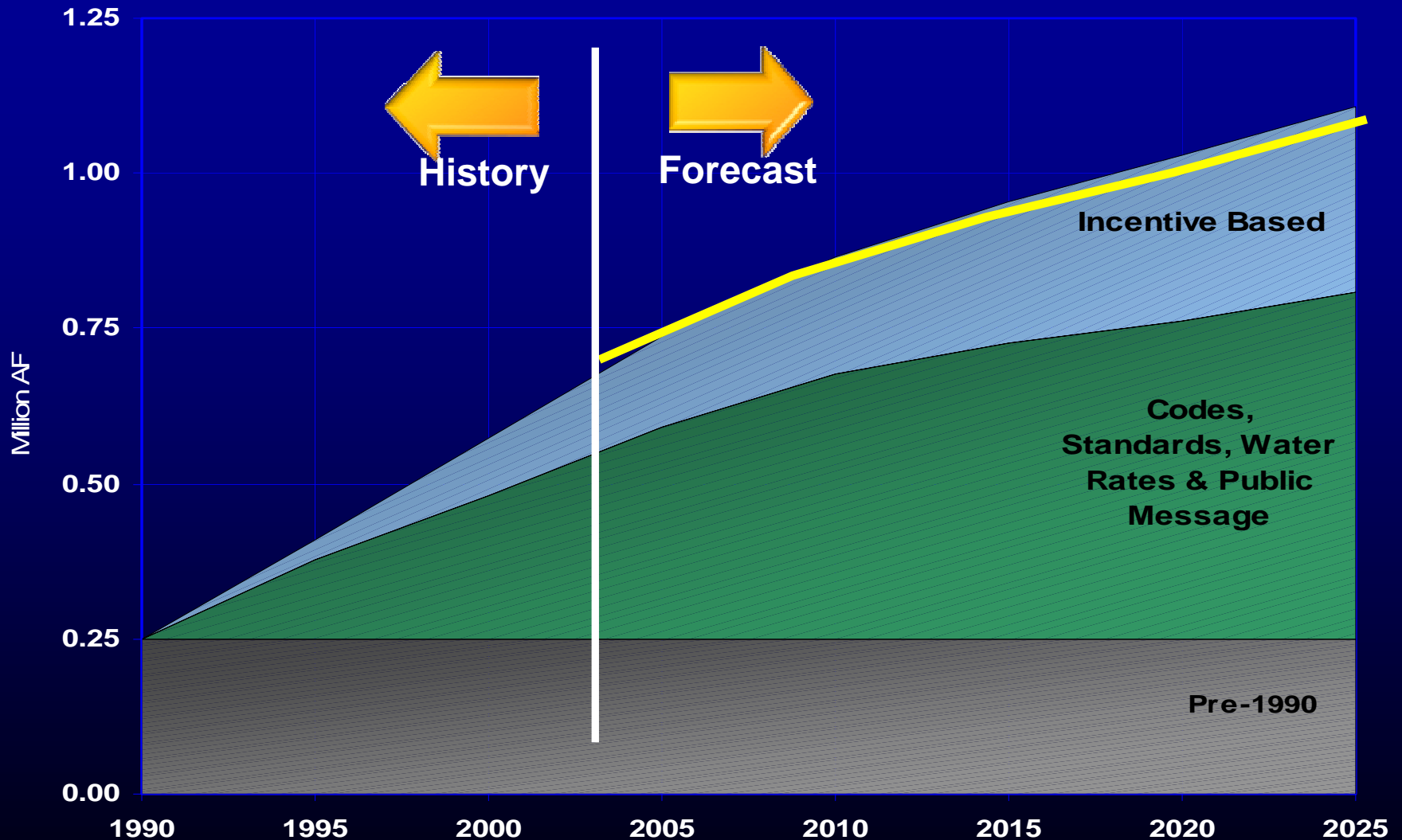


- Indoor conservation
- ULFT toilets
- HE clothes washers

- Regional device rebates
- Industrial process improvements

- Irrigation efficiency
- California Friendly plants
- Education/behavior change

Regional Conservation Target



*Includes passive originated as active.

Water & Energy Awards given to MWD

- CMUA: Best Management Practices
 - 2004 Innovative Conservation Program
 - 2005 Save Water Save a Buck
- Flex Your Power
 - 2004 California Friendly



Residential Indoor Programs

- **110,000 Residential Washers Retrofitted**
 - 3,035 af saved annually
 - 2.2 Million therms saved annually
 - 66 million kwh saved annually
- **2,200,000 million toilets retrofitted**



“Save Water Save a Buck”

- **Created for business**
 - One-stop shop regional program
 - \$20 million contract
- **Annual Savings**
 - 42,000 retrofits
 - 3,200 AF
 - 1.8 million therms for washers





Pre-Rinse Spray Valve Program

- Created for Restaurants
 - Free installation
 - Co-funded with CPUC grants
- Annual Savings
 - 14,600 retrofits
 - 4.9 million therms
 - 832 million gallons



Industrial Process Improvements

- Created for manufacturers

- Metal finishing
- Dye houses
- Industrial laundry



- Simple application & payment

- \$2.36 / thousand gallons saved

Landscape Programs

■ Education

- 31,000 Protector del Agua graduates
- Ad campaign

■ Technology retrofits

- Weather-based controllers
- Synthetic turf
- Irrigation system improvements
- Recycled water

■ New ethic

- City makeover
- Water budgets



Model Home Pilot Program

- \$2,500 incentives per model home
 - Dual flush toilet
 - High efficiency clothes washer
 - Weather-based irrigation controller
 - California friendly landscaping
- First Models: “Preserve at Chino”



Building Industry Association
of Southern California



MWD Water Efficiency Rate Structure



- **Commodity based**
- **Two Tiers**
- **Peaking charge**
- **Storage discounts**
- **Stewardship charge**

Partnering opportunities in demand management



- Sound business case
- Mutual benefits
- Innovation
- Regional & statewide
- CEC: Obtain DOE exemption for HECW standards in 2007

Questions ?



